

REMARKS

The claims listing above indicates the current status of the claims. No claims are amended in this response.

Claim Rejections – 35 USC §102

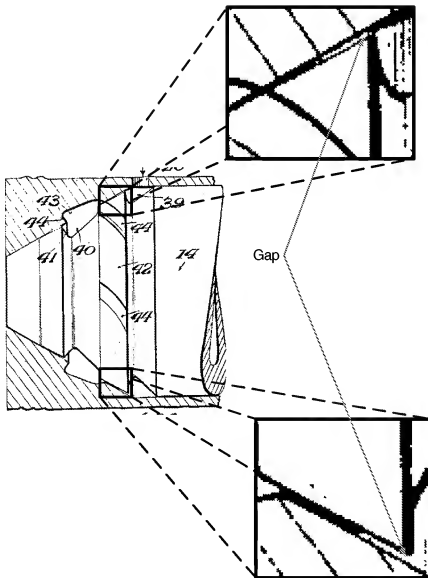
Claims 1-4 and 12 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No 1,952,816 to Mock. Applicants traverse this rejection.

Applicants' invention in claim 1 specifies, in part, that the valve member (10) further comprises an annular ridge (40) protruding from at least one of the surface of the upstream seat region (22) and the surface of the downstream seat region (20, 24) and being disposed immediately downstream of the upstream seat region (22), wherein the protruding annular ridge (40) defines a seating line (112) having a seat diameter, the seating line (112) being engageable with the valve seating surface (14) to control fuel injection from the nozzle body (16).

In contrast, Mock teaches a valve 14 having a conical head 15 adapted to cooperate with the conical valve seat 11 and form a tight joint therewith (page 1, lines 90-98). Applicant submits that this is not a teaching of a protruding annular ridge that defines a seating line engageable with the valve seating surface to control fuel injection from the nozzle body, as specified in Applicants' claim 1.

In the Office Action, the Examiner reproduces Mock's Fig. 3, and identifies Mock's frusto-conical shoulder 42 as corresponding to Applicants' downstream ridge region and the upstream (right-hand) edge of shoulder 42 as corresponding to Applicants' seating line. Applicants disagree with this characterization. Fig. 3 of Mock is reproduced below, with the

regions where the upstream (right-hand) edge of shoulder 42 nears the casing 6 magnified. Fig. 3 of Mock clearly shows that the cone angle of bore in the casing 6 is wider than the cone angle of frusto-conical shoulder 42. As a result the upstream (right-hand) edge of shoulder 42 cannot engage the surface of the bore in the casing 6 to control fuel injection from the nozzle body, but rather there is a gap between the upstream (right-hand) edge of shoulder 42 and the surface of the bore in the casing 6.



U.S. Patent No. 1,952,816 to Mock: Figure 3

Mock also teaches, “the frusto-conical shoulder 42 is preferably provided with spiral slots or grooves 44 on its periphery for increasing the area on which pressure may act to move the valve 14 and for causing the liquid fuel to discharge in a centrifugal spray which will increase the turbulence of the stream” (page 2, lines 131-137). The presence of grooves 44 on shoulder 42, which are shown in Fig. 3 to extend to the upstream (right-hand) edge of shoulder 42, would prevent the upstream (right-hand) edge from shutting off fuel flow even if it were able to engage the surface of the bore. This provides further evidence that the upstream (right-hand) edge of shoulder 42 is not a seating line engageable with the valve seating surface to control fuel injection from the nozzle body, as specified in Applicants’ claim 1.

Mock further teaches, “In the preferred form as shown in Figs. 4 and 5, a construction is provided insuring a tight seat **adjacent the nozzle orifice**, but having a slight clearance between the head and seat for the remaining area” (page 3, lines 3-7). Mock goes on to describe, “The conical valve head 15 is then lapped in place in the valve seat 11 using some fine abrasive compound so as to obtain an absolutely tight seat for a small area 45 adjacent the orifice and providing a clearance 46 of one to two thousandths of an inch on the larger diameter of the cone.” (page 3, lines 25-30) Mock’s Figs. 4 and 5 clearly show clearance 46 in the vicinity of frusto-conical shoulder 42, providing further evidence that Mock provides no teaching or suggestion of the upstream (right-hand) edge of shoulder 42 being a seating line engageable with the valve seating surface to control fuel injection from the nozzle body, as specified in Applicants’ claim 1.

Applicants respectfully submit that Mock neither anticipates nor renders obvious the protruding annular ridge protruding from at least one of the surface of the upstream seat and the surface of the downstream seat region wherein the protruding annular ridge defines a seating line

being engageable with the valve seating surface to control fuel injection from the nozzle body as specified in Applicants' claim 1. Applicants respectfully submit that claim 1 as amended is patentable over Mock, and requests that the rejection of claim 1 be reconsidered and withdrawn.

Regarding claims 2-12, Applicants respectfully submit that these claims are allowable at least for the reason that they depend from claim 1, which is believed to be allowable. Applicants request that the rejection of claims 2-12 be reconsidered and withdrawn.

It is believed, in view of the amendments and remarks herein, that all grounds of objection and rejection have been addressed and overcome, and that all claims are in condition for allowance. The Commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 50-0831.

Respectfully submitted,

/Patrick M.Griffin/
Patrick M. Griffin
Registration No. 29,716

Date
Address: Delphi Technologies, Inc.
Legal Staff – Intellectual Property
MC: 480-410-420
5825 Delphi Drive
Troy, Michigan 48098
Telephone: (248) 813-1215